

Memorandum

Date: April 20, 2000

To: Ms. Triss Chesney
Department of Toxic Substances Control (DTSC), Region 4
Office of Military Facilities
5796 Corporate Avenue
Cypress, California 90630

From: Environmental Management Branch
P.O. Box 942732
601 North 7th Street, MS 396
Sacramento, California 94234-7320
(916) 445-0498

Subject: *Review of Draft Technical Memorandum, Evaluation of Radionuclides in Groundwater at Former Landfill Sites and the EOD Range, Marine Corps Air Station, El Toro, California, dated March 2000.*

Attached are The Department of Health Services' (DHS) comments on the subject report. This review was performed by Ms. Deirdre Dement, Associate Health Physicist, in support of the Interagency Agreement between DTSC and DHS. If you have any questions concerning this review, or if you need additional information, please contact Ms. Dement at (916) 324-1378.


Darice G. Bailey, Chief
Waste Management Section

cc: Mr. Dean Gould
BRAC Environmental Coordinator
U.S. Marine Corps Air Station - El Toro
P. O. Box 51718
Irvine, California 92619-1718

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Department of Health Services

Review of Draft Technical Memorandum, Evaluation of Radionuclides in Groundwater at Former Landfill Sites and the EOD Range, Marine Corps Air Station, El Toro, California, dated March 2000.

April 20, 2000

DTSC Resource Planning Form # 478

The following comments and questions are in response to the request from Ms. Triss Chesney of the Department of Toxic Substances Control to review the *Draft Technical Memorandum, Evaluation of Radionuclides in Groundwater at Former Landfill Sites and the EOD Range, Marine Corps Air Station, El Toro, California, dated March 2000.*

General Comments:

It appears from the analysis and use of uranium isotopic ratios that the groundwater is being analyzed for the presence of depleted and/or enriched uranium. Please clarify from the Jacobs 1993 report whether depleted or enriched uranium were named or suggested in the unsubstantiated reports that low-level-radioactive material may have been used in training exercises. Also, please verify that the explosive ordnance disposal (EOD) Range is the only area named or suggested where uranium materials may have been used or disposed.

As with radium-226 (Ra-226), DHS thinks it unlikely that any unnatural variations of uranium would be found in groundwater at this time, even if it were embedded or buried in the ground, because of the distance from the surface to the groundwater. If the Navy knows of a pathway to the groundwater other than by slow migration through the soil, please make this known. The data with the additions and changes noted in the Specific Comments below may be useful in the future to show if any migration of contamination occurs over time.

Specific Comments:

1. Page 2-1, Section 2.2.1. It is unclear, as it was noted in earlier DHS' comments dated August 19, 1998, why gamma spectroscopy results are only being reported for one isotope (i.e., a pure beta emitter, strontium-90 (Sr-90)) and in this round of results for only one sample. There is no method shown for this one analysis. Please provide the method used. The method of analysis reported as used for the analysis of Cs-134 from the APCL Analytical Report dated 12/18/97, is EPA Method 901.1 which is the Standard Method for analysis of gamma emitting radionuclides in drinking water. If this was the method used, DHS wonders why other gamma emitters were not reported. For example, potassium-40 (K-40) is a naturally occurring beta/gamma emitter, is easy to detect with this method, and could account

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Specific Comments: (Continued.)

for elevated betas found during the gross beta analysis. This analytical method is applicable for analyzing water samples that contain radionuclides emitting gamma photons with energies ranging from 60 to 2000 kev (i.e., K-40, cesium-137, cobalt-60, radium-226, uranium and thorium daughters, etc.) This method detects a multitude of radioisotopes, and it requires no further processing or analysis to obtain a wide range of data relatively inexpensively. The only additional expense to the laboratory, which is most likely set up for these analyses, is to validate the results and report them and the lower limits of detection along with the analytical results you have already requested. Most radiological laboratories using this method are unable to detect pure beta emitters using gamma analysis.

2. Page 3-1, Section 3, Analytical Results: Please verify that the reported uncertainty (\pm) values shown are 2 sigma uncertainties and specify whether or not they include only counting uncertainties or total uncertainty.
3. Page 3-1, Section 3.3: See Specific Comment 5 regarding "adjusted gross values."
4. Page 3.1, Section 3.4: See Specific Comment 1 regarding gamma analysis. Please specify the method used for the Sr-90 analysis.
5. Table 3-1 and Figure 3-1, Pages 3-3 and 3-4. DHS does not agree with the numbers assigned as "Adjusted Gross Alpha" values. The numbers derived from the "total uranium" results subtracted from the "gross alpha" results do not take into account the errors associated with each of the uranium results used to derive the total uranium or the errors associated with each of the gross alpha results. If the uranium results were to include the errors for each value, then the total uranium values would also include an associated error, showing the range of values this number represents. Please verify that the \pm values shown in the tables represent the 2 sigma errors (2σ), if not they should be changed to the 2σ values and these numbers may then be used to calculate the errors to be reported with the total uranium values. For example at Well Number 02_DGMW60-GW01S, if the errors shown with the pCi/L results for analysis of U-234, U-235 and U-238 are 2σ errors, then the respective values of 25 ± 3.1 , 1.32 ± 0.29 and 19.5 ± 2.5 would total 45.82 ± 3.99 . This total uranium value compares well with the gross alpha value of 50 ± 7.1 (i.e., the total uranium value ranges from 41.83 to 49.81 pCi/L which overlaps the gross alpha range of 42.9 to 57.1 pCi/L.) Please recalculate the total uranium values and do not report an adjusted gross alpha for gross alpha values that fall within the range of the total uranium values. The data appear to indicate that gross alpha values are related to total uranium results. It might be useful to show a scatter plot of gross alpha results versus total uranium results.

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Specific Comments: (Continued.)

6. Pages 4-1 and 4-2, Section 4 and Table 4-1: As in the case above, the 2σ uncertainties for each analytical result should be included for each isotope and used to propagate the uncertainties for each of the ratios reported.
7. Page 4-3, Section 4.2: It should be clarified that the "no further analysis" label was meant to apply to individual samples going through the screening process not to designate a sampling location as requiring no further sampling and/or analysis. Samples taken from the same well may have varying results, and contaminant levels change over time which is why many drinking water wells are routinely monitored within the State of California to ensure that they meet drinking water requirements.
8. Page 5-1, Section 5: See the Specific Comment 7 above regarding "no further analysis."
9. Appendix A, Pages 1-7: To make this data meaningful, as noted in the comments above and in DHS' comments dated April 30, 1998, all results for radioanalysis should specify how the error or uncertainty was determined. These are usually shown next to the value as $\pm 2\sigma$ pCi/L. Without this information, you cannot know what the quality of the data is, or whether the data ranges overlap.

Department of Toxic Substances Control

Office of Military Facilities

RESOURCE PLANNING FORM

4778

FACILITY NAME: Marine Corps Air Station EIToto Document Name & Date: Draft Tech Memo Radionuclides in GW 3/2000 DTSC Site Code: 400055/47 Date: 1/1

AGENCY COORDINATOR: Darice Bailey ASSIGNED TO: Deirdre Dement PHONE #: (916)324-1370 FUNDING SOURC ☐ DERA ☒ BRAC III

DTSC PROJECT MANAGER: Triss Chesney PHONE #: (714)484-5395 FAX #: (714)484-5437

AGENCY	ACTIVITIES	TASKS	HOURS	Due Date	COMPLETION	Rev. Date
DTSC:	ARAR's Related Oversight <input type="checkbox"/>	WRITTEN MEMO: <input checked="" type="checkbox"/>	Est. <u>40</u>	Due Date <u>4/21/00</u>	Hours	Date
RPM <input type="checkbox"/>	Consultative Services <input checked="" type="checkbox"/>	VERBAL RESPONSE: <input type="checkbox"/>		Rev. Date		
Geologist <input type="checkbox"/>	14740 PAJSI	ATTEND MEETING: <input type="checkbox"/>				
Toxicologist <input type="checkbox"/>	14740	date(s)				
IH <input type="checkbox"/>	PAJSI	location				
Legal <input type="checkbox"/>	PAJSI	SITE VISIT: <input type="checkbox"/>				
HML <input type="checkbox"/>	PAJSI	TOTAL HOURS:				
PPS <input type="checkbox"/>	14740	Specify corresponding number and description from DSMOA Resource Estimation Worksheet #:				
EARS <input type="checkbox"/>	PAJSI	Unscheduled Activity				
PEAS <input type="checkbox"/>	PAJSI	Description:				
Other <input type="checkbox"/>	PAJSI	Explanation:				
Partner Agency:	14740	Description of Specific Tasks or Deliverables				
RWQCB: <input type="checkbox"/>	PAJSI	Please review the Draft Technical Memorandum for Radionuclides in Groundwater and provide written comments.				
Region: <input type="checkbox"/>	PAJSI	The Navy has not specified a review period for this document. The due date above reflects approx. 30 days of review. Please let me know if you require additional time for your review.				
Concurrence: <input type="checkbox"/>	PAJSI	Thanks for your help. Please let me know if you need a copy of the document. You should have received it directly from the Navy.				
DHS: <input checked="" type="checkbox"/>	PAJSI					
Concurrence: <input type="checkbox"/>	PAJSI					
FISH & GAME: <input type="checkbox"/>	PAJSI					
Concurrence: <input type="checkbox"/>	PAJSI					
CIWMB: <input type="checkbox"/>	PAJSI					
Concurrence: <input type="checkbox"/>	PAJSI					
AECDO/OMD: <input type="checkbox"/>	PAJSI					
Concurrence: <input type="checkbox"/>	PAJSI					

Directions

1. DTSC RPM - Fill out request form in consultation with agency staff assigned to project or agency coordinator.
2. DTSC RPM - FAX the agreed upon signed request form to agency coordinator or assigned staff.
3. DTSC RPM - FAX copy of the agreed upon signed request form to DTSC ICU contact for appropriate agency.
4. On completion of requested task(s), AGENCY STAFF enter actual hours and completion date. Return completed form to DTSC RPM with deliverables.
5. DTSC RPM - On receipt of completed request form, enter completion date and FAX to the appropriate DTSC ICU agency contact.

Triss M. Chesney
Triss M. Chesney
EY

DTSC RPM Signature

(Print Name)

Unit Chief/Team Leader Initial

TOTAL P.02

MAR-27-2000

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FROM

DTSC

Cypress

TO

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